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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/597,285 | 07/19/2006 | Yasuhiro Maenishi | 40648 | 8841 |

52054 7590 04/13/2009
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| EXAMINER |
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SIVANESAN, SIVALINGAM

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| ART UNIT | PAPER NUMBER |
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4112

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| NOTIFICATION DATE | DELIVERY MODE |
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04/13/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
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| Office Action Summary | Application No. 10/597,285 | Applicant(s) MAENISHI ET AL. | |
| | Examiner SIVALINGAM SIVANESAN | Art Unit 4112 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/19/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/19/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Claim 12 recites the limitation "computer readable recording medium". There is insufficient antecedent basis for this limitation in the claim. Examiner takes the position that the term refers to statutory hardware storage medium such as disk drives.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A "program" or software not embodied on tangible medium is non-statutory in accordance with the following:

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

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In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim Objections

1. Claims 19- 23 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 9, 10, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Maenishi et al (PCT Pub. No.: WO01/24597 published on April 5, 2001 in Japanese language; US patent, # 6971161 B1, is used as its translation). Hereinafter referenced as Maenishi.

6. Regarding claim 1, Maenishi discloses a line balance control method which targets at production line having a plurality of component mounting machines that mount components on a substrate and Which controls line balance by allocating components to be mounted, to each component mounting machine, including a possibility inquiring step in which at least one of devices including the component

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mounting machines that configure the production line makes an inquiry of whether or not it is possible to mount components to be allocated, to component mounting machines which become allocation destinations (col. 2, l. 10 – 54; claim 1);

a possibility Obtaining step in which the device obtains a response to the inquiry in the possibility inquiring step (col. 2, l. 10 – 54; claim 1).; and

an allocating step in which the device or another device that configures the production line allocates components to be mounted, to each component mounting machine, in such a manner that mounting time at each component mounting machine is equalized, on the basis of the response obtained in the possibility obtaining step (col. 1, line 5 -65; col. 2, l. 10 – 54; claim 1).

7. Regarding claim 9 , Maenishi discloses an apparatus which carries out control of line balance intended for a production line including a plurality of component mounting machines and configures the production line, comprising:

a possibility inquiring section, which makes an inquiry of whether or not it is possible to mount components to be allocated, among the components to be mounted, to component mounting machines which become allocation destinations(col. 2, l. 10 – 54; claim 1);

a possibility obtaining section, which obtains a response to the inquiry in the possibility inquiring section(col. 2, l. 10 – 54; claim 1); and

an allocating section, which allocates components to be mounted, to each component mounting machine, in such a manner that mounting time at each Component mounting machine is equalized, on the basis of the response obtained in the possibility obtaining section(col. 1, line 5 -65; col. 2, l. 10 – 54; claim 1).

8. Regarding claim 10, Maenishi discloses every thing as applied as above (see claim 9). In addition claim 10 is the inherent variation of claim 9. Therefore claim 10 is interpreted as above and rejected for the same reason set forth above (see claim 9).
9. Regarding claim 13, Maenishi discloses a line balance control method which targets at a production line having a plurality of component mounting machines that mount components on a substrate, having
an actual production information obtaining step of obtaining actual production information regarding a state after actual production start from each component mounting machine(abs; (col. 2, l. 10 – 54; claim 1);
a judging step of judging whether or not control of line balance is necessary or not on the basis of the actual production information of each component mounting machine (col. 54, lines 5 -30; claim 1); and
a line balance adjusting step of carrying out at least one processing among component allocation to each component mounting machine and a change of a mounting pattern on a substrate which each component mounting machine is in charge of, in case that it was judged that the control of line balance is necessary(claim 1-5).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 7, 8, 11, 12, 24, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Maenishi as applied to claim 1.

12. Regarding claims 7, 8, 11, 12, 24 and 25 Maenishi discloses everything as applied above (see claim 1). In addition claims 7, 8, 11, 12, 24, and 25 are the obvious variation of claim 1. Therefore claim 7, 8, 11, 12, 24, and 25 are interpreted as above and rejected for the same reason set forth above (see claim 1).

13. Regarding claims 14-23, Maenishi disclosed everything as applied above (see claim 13). In addition claims 14- 23 is the obvious variations of claim 13. Therefore claims 14-23 are interpreted as above and rejected for the same reasons set forth above (see claim 13).

14. Claim 2 and 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Maenishi as applied to claim 1 above, and further in view of Ohsawa et al.(US 5,625,832). Hereinafter referred to as Ohsawa.

15. Regarding claim 2, Maenishi disclosed everything as applied above (see claim 1). Maenishi does not disclose the line balance control method wherein the possibility inquiring step is carried out by a device which does not require optimization of that device itself, among devices which are included in the production line. However Ohsawa disclose a distributed processing control method and distributed processing system wherein the possibility inquiring step is carried out by a device which does not require optimization of that device itself, among devices which are included in the production line (fig.1; abstract; col. 5, lines 35 – 62; col. 14, line 49 – col. 15, line 40).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Maenishi and Ohsawa for the purpose of increasing the efficiency line balance control.

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16. Regarding claim 3, Maenishi and Ohsawa disclose everything thing as applied above (see claim 1 and 2). In addition claim 3 is the obvious variation of claim 2.

Therefore claim 3 is rejected for the same reasons set forth above (see claim 1 and 2).

17. Regarding claim 4, Maenishi and Ohsawa disclose everything thing as applied above (see claim 1 and 2). In addition Maenishi inherently discloses a line balance control method further comprising: a step of obtaining a load which is loaded to an arithmetic processing section that each device, which is included in the" production line, has, through a communication line connected between the devices step (col. 1, line 5 -65; col. 2, l. 10 – 54; claim 1). Maenishi does not discloses a method wherein the possibility inquiring step is carried out by a device which has the largest room in processing ability of the arithmetic processing section. However Ohsama inherently discloses a method wherein the possibility inquiring step is carried out by a device which has the largest room in processing ability of the arithmetic processing section(fig. 1; abstract; col. 5, lines 35 – 62; col. 14, line 49 – col. 15, line 40). It would have been obvious to one of ordinary skill in the art to combine the teachings of Maenishi and Ohsama for the purpose of increasing the efficiency line balance control.

18. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Maenishi as applied to claim 1 above, and further in view of Takano et al.(US 6,729,018 B1).

Hereinafter referred to as Takano.

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19. Regarding claim 5, Maenishi discloses everything as applied above (see claim 1).

Maenishi does not disclose mounting method wherein components are mounted in ascending order of height. However Takano discloses a step of obtaining a connecting position in the production line, wherein, in case that mounting of components by use of the plurality of component mounting machines is carried out in the order corresponding to component height, the possibility inquiring step is carried out by a component mounting machine which has been connected to uppermost stream (Fig. 4; abstract; claims 1-4). It would have been obvious to one of ordinary skill in the art to combine the teachings of Maenishi and Takano for the purpose of avoiding inference of mounting parts and, therefore, to shorten the mounting time.

20. Regarding claim 6, Maenishi and Takano disclose everything as applied above (see claim 1 and claim 5). In addition Claim 6 is an obvious variation of claim 5.

Therefore, claim 6 is rejected for the same reason set forth in claim 5 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SIVALINGAM SIVANESAN whose telephone number is (571)270-7258. The examiner can normally be reached on 7:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Harold can be reached on 5712727519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SIVALINGAM SIVANESAN/

Examiner, Art Unit 4112

/Tse Chen/

Primary Examiner